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report on the Ursus Mechanical Works in Ursus, near Warsaw. The report contains the following information on the plant layout and use of buildings; general information on factory facilities; detailed information on three foundries; past, present, and planned future production through 1963.

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THE URSUS MECHANICAL WORKS IN POLAND

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THE URSUS MECHANICAL WORKS IN POLAND

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Introduction

information on the production, expansion, labor force, and general plant layout of the factory. Included is a sketch of the factory layout and a description of the buildings, including their use.

a sketch of each of the three foundry buildings and approximate location of major items of machinery and complete information as to number and type of furnaces.

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Listed below are the names, geographic coordinates, and UTM coordinates of locations used in this report:

<u>Location</u>	<u>Geographic</u>	<u>UTM</u>
PRUSZKOW	N52-09, E20-49	DC-8679
SADEK	N51-12, E20-53	DC-915725
SZYDLOWIEC	N51-13, E20-52	DB-9075
URSUS	N52-12, E20-53	DC-925835

URSUS MECHANICAL WORKS IN POLAND

1. Background

The reconstruction of the Ursus Mechanical Works (Zaklady Mechaniczne - Ursus) was completed in 1947, in URSUS, a city about 10 kilometers west of WARSAW (see Annex A for pinpoint location). It was built to produce tractors for agriculture and forestry, and prime movers for industry. These tractors, called "Ursus," were powered by 45-hp engines, also produced there.

When the original design for the Ursus was made, little consideration was taken of the best type of tractor for Polish needs. Soon after WW II, the Soviet influence in Polish industry was well established and, as a result, the heavy Ursus tractor was scheduled for production. Even though it was soon evident that it was too heavy and too powerful for Polish needs, nothing was done to alter the production because increased Soviet influence resulted in fear to speak out against a Soviet-oriented production.

With Gomulka's rise to power in 1956, however, and the return of private ownership of farms, which greatly reduced the average size of farms, the actual needs of the country became more important than the senseless production of impractical tractors. The Polish engineers felt free to speak out against the continued production of the 45-hp Ursus, and plans were made for the production of a much smaller tractor which would be more practical in Poland.

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2. Productiona Production From 1947 to 1958

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During the period 1947 to 1958, the Ursus plant produced about 60,000 45-hp tractors. Although the plant had a production capacity of 6,000 tractors yearly, it rarely produced more than 5,500. In 1952, it produced only 4,000 tractors [redacted]

The Ursus plant produced all parts of the tractor including the engines. The production of tractor chassis and engines was about equal, and the figures in this report reflect complete tractor units (chassis and engine). These tractors were the only product of the factory; there had never been any attempt to produce bulldozers or tank engines at this plant. [redacted]

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Since 1958, the production of the 45-hp Ursus has been on the decrease because of the start of production of a new, lighter model, the 25-hp Ursus.

b Production Since 1958

In 1958, the Ursus plant started the production of the new 25-hp Ursus tractor. This new production was to replace the old production completely by 1962 or 1963. Included in this new production was to be a small hand, single-axle cultivator for use on very small plots of ground and small farms. By 1963, it was planned to produce 2,000 hand cultivators yearly.

These changes in production were to be gradual, with as little effect on employment as possible. The plan was as follows: in 1958, only 300 of the new 25-hp tractors were to be produced and 2000 of the old 45-hp tractors; in 1959, it was planned to produce 2000 25-hp tractors and from 800 to 1000 of the old type; and by 1960, all production of the old 45-hp tractors would be stopped and about 5,000 of the new tractors produced. Anticipated production for the years 1961 and 1962 was unknown [redacted] but [redacted] by 1963 Poland planned to produce 12,000 25-hp tractors and 2,000 hand cultivators yearly.

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[redacted] no concrete information about the prices of the 50X1-HUM tractors and hand cultivators but stated that the old tractor sold for about 60,000 zlotys and that the new one would sell for about half that price. [redacted] no information about the price for the hand cultivators but was sure that it would be reasonable so that many peasant farmers would be able to buy them. Since the government expected these new tractors and hand cultivators to help increase farm output considerably, it would be foolish for them to price them out of reach of too many farmers.

3. Expansion of the Ursus Plant Since 1956

In preparation for the new increased production at the Ursus plant, expansion started in 1956. [redacted] no detailed information about this expansion except with regard to the foundry facilities, as follows:

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- 1956 - Construction of a new cast-iron-foundry-materials storage magazine (magazyn materialow formierskich dla odlewni zeliwa). [redacted]

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- 1957 - Expansion of the cast iron foundry, including the addition of two new cupola furnaces with diameters of 700 mm (Fi - 700 mm); also other minor internal improvements such as replacement of old machinery with new or rebuilt machines or parts; and reorganization of lines of production within the factory portion of the plant, partly for convenience and partly for efficiency. [redacted]

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1957 and 1958 - Construction of a new building to house the bronze foundry (it had been in the same building with the aluminum foundry) and expansion of its production capacity from 600 to 1000 tons yearly; also, expansion of the aluminum foundry to increase the capacity from 900 to 1500 tons yearly.

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there would be still other such work to be done within the plant in order to be able to produce 12,000 tractors yearly by 1963

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4. Labor Force

The Ursus plant employed about 4000 people in December 1958 on three shifts: the first shift, about 2500 workers, worked from 0600 to 1400 hours; the second shift, about 1000 workers, worked from 1400 to 2200 hours; and the third shift, the smallest, made up of about 500 workers, worked from 2200 to 0600 hours. All three shifts worked six days a week.

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of the 4000 employees about 400 were engineers and technicians, 2000 were skilled laborers, 400 were administrative personnel, and about 1200 were unskilled laborers. There were about 800 women employed at the plant.

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The morale of the workers was customarily high at Ursus. It was a large, modern factory and it played an important role in Poland's economy, all of which added to the workers' prestige. no information on wage scales, but they compared favorably with other large factories in Poland.

by 1960 only 3500 workers would be needed to operate it on a full-scale basis. This meant that there was to be a cut of 500 in the total employment of 1956. This cut was made possible by the improvements in the plant operation, such as installation of new modern machines, more efficient work organization, and general mechanization of the plant.

5. Distribution of End Items

most of the production was used in the agricultural industry. not know whether Poland exported any Ursus tractors but in 1958, there were many (several hundred) 45-hp Ursus tractors standing idle on the plant grounds, so there was no real shortage of this type in Poland.

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before GOMULKA came to power in 1956, the Ursus was almost forced on the Polish consumers. Since that time, however, the consumers could choose which type of tractor they wanted and were generally free to spend what money they had on what they wanted. This had obviously influenced the production of tractors and the decision to change the type of Ursus. Much more emphasis was being placed on consumer demand than ever before. This was true not only with tractors but in all phases of production. No longer was the old premise that "what was good for the USSR was also good for Poland" the order of the day.

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6. Sources of Raw Materials

Much of the metal used in the production at the Ursus plant came from metal works (huty) in Silesia (names and locations unknown). The iron ore was imported mainly from the USSR and China and some from Quantities and cost of these imports were unknown

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7. Foundry Facilities at Ursusi The Gray Cast Iron Foundry (Odlewnia Zeliwa Szarego)

The cast iron foundry was located in one of the largest buildings on the factory grounds, a red brick, three-section building, about 120 by 50 by 5 m (first section), 10m (second section), and 7m (third section) (for sketch of the building see Annex B). Annexed to the northeast side of the building was the foundry materials storage house (magazyn materialow formierskich), a red brick building about 60 by 25 by 9 m. There was a series of large concrete bins, used for the storage of sand, clay, and other foundry materials, in the building. The northern end of the storage building was open, and the railroad track entered, running the full length of the building. There was an overhead crane unloading device used for filling the storage bin from railroad cars

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The foundry was equipped with four cupola-type foundry furnaces (zeliwiaki odlewnicze) with a combined capacity of 12,000 tons yearly. In 1958 the foundry was not producing at full capacity and probably would not until 1961 or 1962, when all the expansion and reorganization of the entire plant was completed. (See Annex B for approximate location and organization of the sections within the foundry).

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b Aluminum Foundry at the Ursus Plant (Odlewnia Aluminum)

The aluminum foundry was located in a building of steel construction, about 60 by 50 by 6m. The walls of the building were covered with sheet metal (see Annex C for sketch of the building). At the south end was a 2-story part, about 12 by 50 by 10 m, of gray cement brick, which was used for the foundry offices. All three foundries (cast iron, aluminum, and bronze) had their offices in this building. A railroad spur was located on the west side of the building; all the foundry materials such as sand, clay, and ore were transported by rail to the foundry. The western portion of the building was used for storage of foundry materials (see sketch in Annex C). There were large concrete storage bins located in this section (number and dimensions unknown).

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The foundry was equipped with 10 oil-burning crucible furnaces with capacities of 250 kg of aluminum (or 100 kg of bronze), and one induction furnace with a capacity of 250 kg. They were located in a straight line, running north and south, through the entire length of the foundry (see Annex C). The internal organization of the foundry was unknown.

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In 1958, the total production capacity of the foundry was 1500 tons yearly. Not all of this production was for the Ursus plant, but was partly for Ursus, partly for the manufacture of mining machines, but mostly for the automotive industry.

much of the production was transported to the automotive factory in ZEHAN.

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The electric sub-station for the aluminum and cast iron foundry was located at the north end of the building.

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c The Bronze Foundry at Ursus (Odlewnia Stopu Miedzi)

The bronze foundry was located in a red brick building, about 35 by

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10 by 8 m, which had a pitched roof with a skylight running the full length (see Annex D for sketch). A rail spur, on the west side of the foundry, was used to transport foundry materials such as sand, clay, and others to the foundry. The foundry materials storage area was located in the western side of the building and the furnaces were arranged in a single row adjoining the storage area (see Annex D). There were concrete bins for storage of these materials [redacted]

[redacted] not recall the exact internal organization of the foundry, [redacted] 5 oil-burning crucible furnaces with capacities of 250 kg each. [redacted] also [redacted] there were two centrifugal casting machines of Western type (exact type was unknown), in the northeastern part of the building. 50X1-HUM

In 1958, the capacity of this foundry was 1000 tons yearly. Not all of this production was used at the Ursus plant. [redacted] much of the bronze was transported to the automotive factory in ZERAN, near WARSAW. [redacted]

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8. Plant Layout and Description

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The Ursus plant was located in flat, open terrain with a total area of about 300,000 sq m. It was easily accessible and conveniently served by the main railroad line from WARSAW to PRUSZKOW. The entire area, with the exception of about 300 m on the southern boundary, was enclosed by a heavy wire fence about 2 m high; the other 300 m was enclosed by a brick fence, also 2 m high. There were two entrances for foot traffic and one for the rail spur; all three were guarded by factory security personnel, to whom passes had to be shown in order to gain entrance.

[redacted] less than half of the terrain was built on, leaving ample room in the event of further expansion.

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See Annex E for detailed description of buildings and terrain features.

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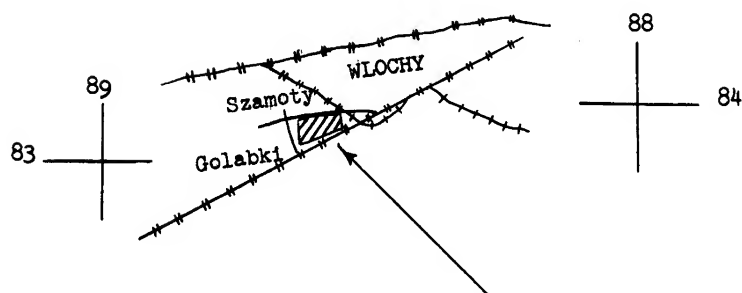
ANNEX A

PINPOINT LOCATION OF THE URSUS MECHANICAL WORKS NEAR WARSAW, POLAND

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Map Ref: WARSZAWA, Poland
1:100,000

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Legend



Factory Terrain of the
Ursus Mechanical Works

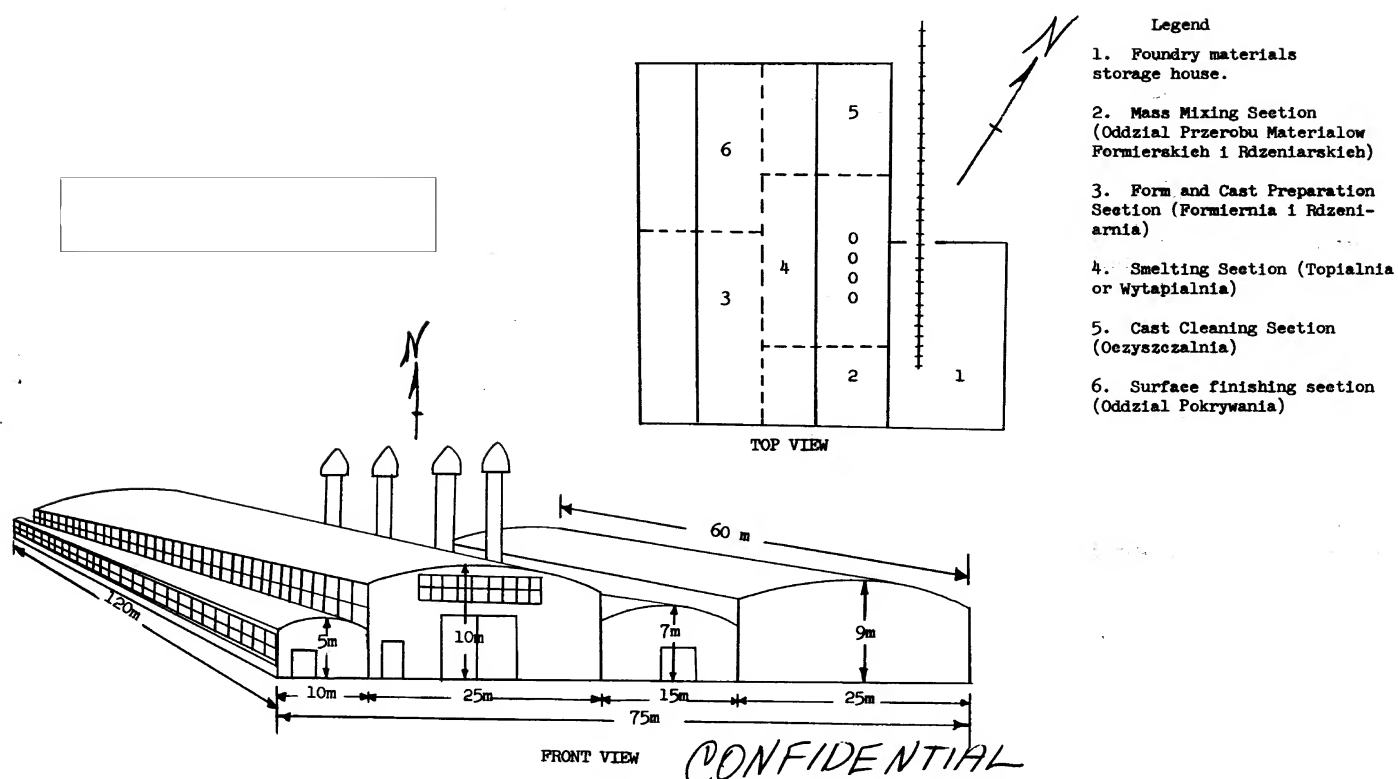
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GRAY CAST IRON FOUNDRY AT THE URSUS MECHANICAL WORKS IN POLAND

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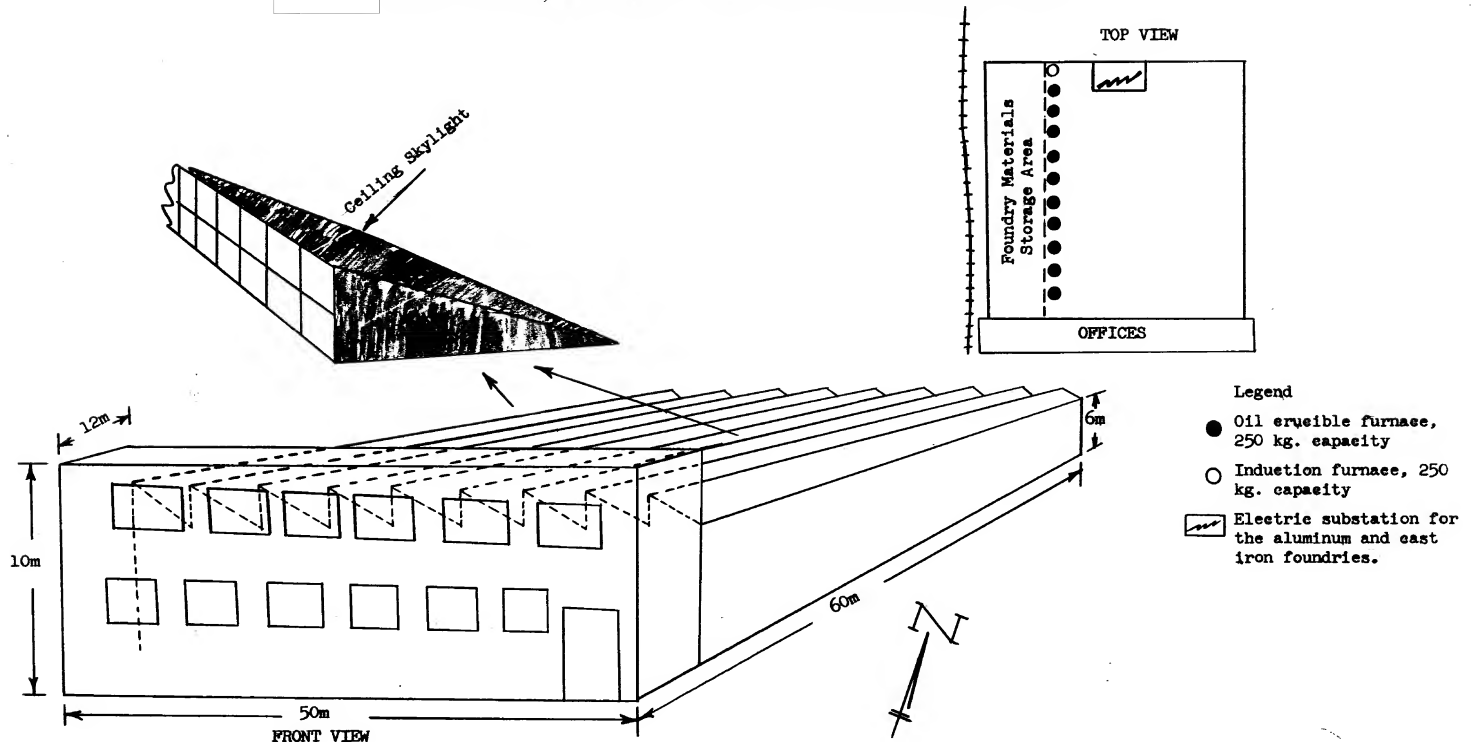
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ANNEX C

SKETCH OF THE ALUMINUM FOUNDRY AT THE URSUS MECHANICAL WORKS IN POLAND



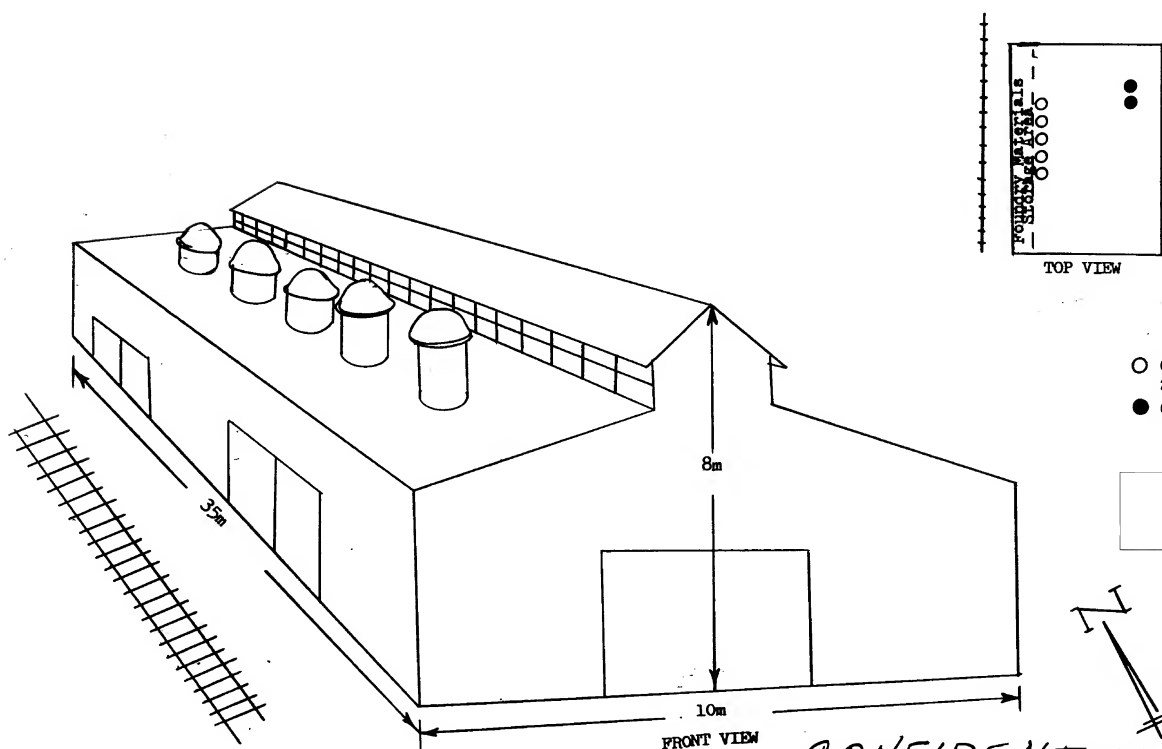
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SKETCH OF THE BRONZE FOUNDRY AT THE URSUS MECHANICAL WORKS IN POLAND

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Legend

- Oil furnaces with capacities of 250 kg.
- Centrifugal casting machine

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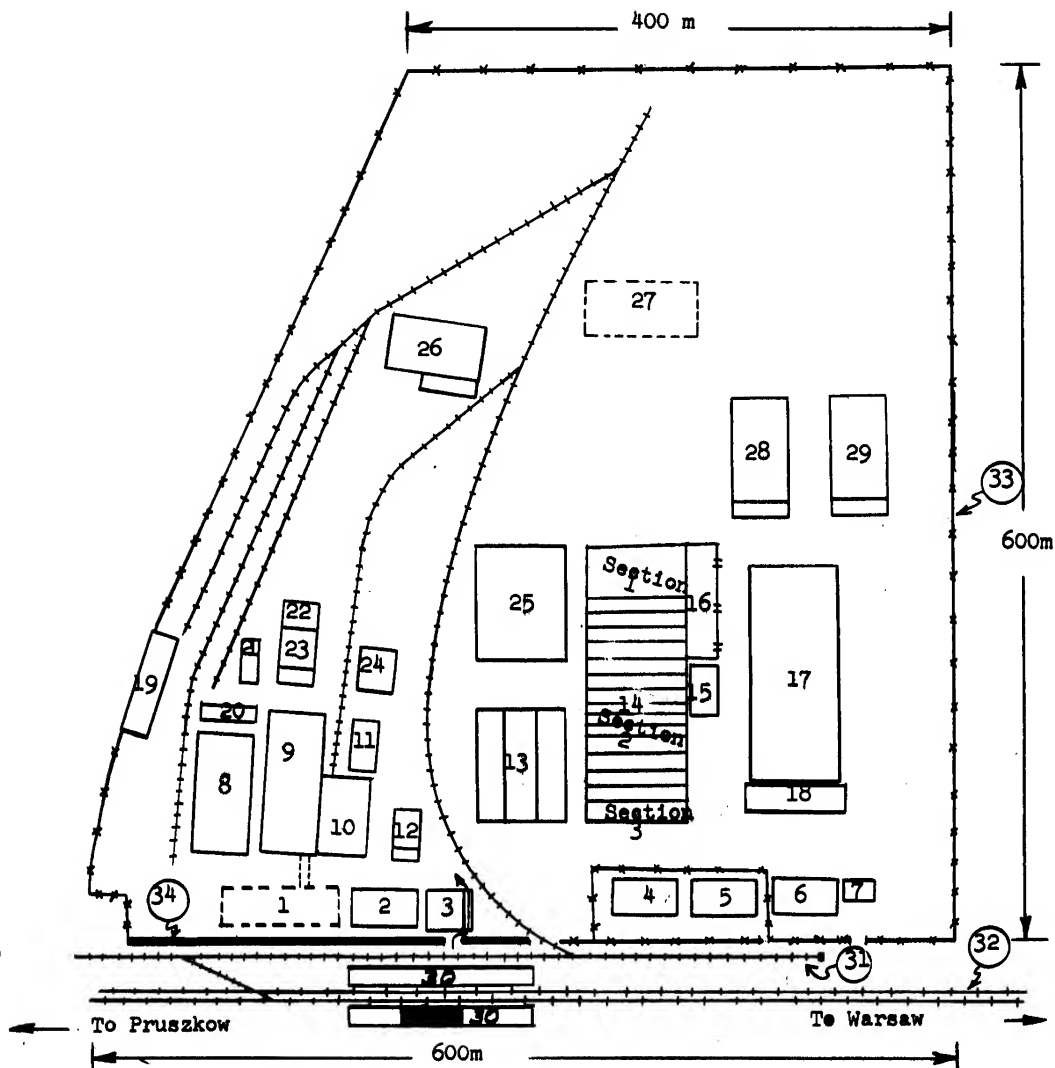
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ANNEX E

LAYOUT OF THE URSUS MECHANICAL WORKS IN POLAND

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Legend to Annex E

1. This was the projected location of the new factory laboratory. It was to be a 2-story red brick building, about 100 by 10 by 12 m, with an underground access passage to the east iron foundry (number 9 on Annex E). It was to be completed and ready for use by the end of 1960. [redacted] 50X1-HUM
2. This was a 3-story red brick apartment building, about 30 by 10 by 10 m. It furnished living quarters to nine workers' families. It was a normal, square apartment type building. [redacted] 50X1-HUM
3. This was a 2-story red brick building, about 15 by 6 by 7 m. It was a combination workers' security check entrance (portiernia), factory security guard office (biuro strazy przemyslowej), factory information office (Komorka informacji), and factory workers' council office (biuro rady zakladowej). At the east end of the building, there was an open porch-type passage, through which workers had to pass and show their identification in order to gain entrance to the factory. [redacted] 50X1-HUM
[redacted]
4. This was a 2-story, gray stucco-brick building, about 30 by 12 by 7 m. It served as a day nursery (zlobek) for small children, and a preschool (przedszkole) for older children. The main entrance, on the north side of the building, was recessed about two meters in from the face of the building. Steps leading to the front door were also within the recess. This building and building number 5 were both enclosed by a heavy wire fence about 2 m high. Entrance to the area was from without the factory terrain; no further entrance to the factory proper could be made from this area (see sketch, Annex E).
5. This was the factory dispensary facility (ambulatorium), in the same wire-fence-enclosed area as building number 4. It was a 1-story gray stucco-brick building, about 30 by 12 by 4 m. [redacted] 50X1-HUM
[redacted]
6. This was a combination cultural building, lecture hall, and theater. It was a large rectangular building, about 35 by 25 by 7 m, with a flat roof. At the west end of the building was a stage; auditorium seats were arranged in a semicircular pattern to the rear of the building. The outstanding feature of the building was the tall narrow windows on both sides from the east end to within 12 meters of the west end. There were smaller windows in the west end where the stage was. The building was gray stucco-brick and very modern in appearance. No further information.
7. This was the other workers' entrance building (portiernia), with several entrance gates through which workers had to pass to gain entrance to the factory. This was the visitors' entrance gate also. The guard in this building issued visitors' passes after phoning for permission from the section of the factory to be visited. It was a gray stucco-brick building about 12 by 4 by 3 m. No further information.
8. This was the aluminum foundry; for a complete discussion see paragraph 7, b of this report.
9. This was the gray east iron foundry; for a complete discussion see paragraph 7, a of this report.
10. This was part of the gray east iron foundry; for a complete discussion see paragraph 7, a of this report.

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Legend to Annex E (Continued)

11. This was the bronze foundry; for a complete discussion see paragraph 7, (c) of this report. 50X1-HUM
12. This was the fire house, a red brick building, about 12 by 10 by 5, with a gray stucco tower about 15 m high. There were two large garage-type doors on the west side of the building. [redacted] two fire trucks parked in the building (types and descriptions unknown). The building also housed the factory fire guards (straz poezna). [redacted] 50X1-HUM
13. This was the parts room, a red brick building about 60 by 60 by 8 m. The building was divided into three separate sections with an entrance to each section at the north and south ends of the building. Parts were stored in this building for machines and factory equipment and for tractors produced at the factory. The shipping and receiving room for spare parts for machines and equipment and tractors was also in the building. [redacted] 50X1-HUM
14. This was the mechanical production and heat treatment section, a three-part building, about 180 by 100 by 8 m, 8 m, and 12 m respectively. Section one was a elere-story-type building which housed the heat treatment division (wydzial obrobki cieplnej). Section two, with a saddleback roof, the largest section, housed the mechanical production division (wydzial mechaniczny) and contained such equipment as lathes, saws, punches, and drills. Also in this part of the building were the production lines for the assembly of small complex tractor parts. Section three housed the offices of the two other divisions. It was a 2-story box-shaped part of the building with a flat roof. Additions had been made to the building at various times which accounted for the three sections. [redacted] 50X1-HUM
15. This was an open water reservoir (zbiornik wody), about 15 by 10 by 3 m. It was a concrete basin almost adjacent to building number 14.
16. This was the Central Factory Production Office (Centralne Biuro dla Produkcji Calego Zakladu). It was a 3-story, flat-roofed, red brick building, about 80 by 10 by 12 m. It contained the offices of the chief mechanic (glowny mechanik), the chief construction engineer (glowny konstruktor), and the chief metallurgist (glowny metalurg). Each of these men had one floor of the building for his offices and staffs. [redacted] 50X1-HUM
17. This was the main production building where the various assemblies which make up a tractor were put together to form the end product. It was called the chief mechanic's workshop (warsztat glownego mechanika). The building was of steel and gray cement brick, with a saddleback roof, and measured about 100 by 80 by 10 m. There was a single row of windows about 1 by 1 m along both sides of the building. There were two complete assembly lines for the old Ursus tractors in the building. [redacted] there would be three assembly lines for the production of the new Ursus tractors. [redacted] 50X1-HUM
18. This was a 3-story, flat-roofed, gray stucco office building, about 80 by 10 by 12 m. It housed the plant management offices, such as the offices of the chief director (naczelnny dyrektor) and deputy director (zastepa naczelnego dyrektora), and the main factory administrative offices (zarzad fabryki). [redacted] 50X1-HUM
19. This was the model workshop (modelarnia) where models of various tractor parts and components were fashioned from wood or metal. It was a 3-story, red brick, flat-roofed building, about 30 by 10 by 12 m. It contained such equipment as wood and metal lathes, saws, sanders, and other machine tools. Metal was stored on the third

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Legend to Annex E (Continued)

floor and wood on the second floor. The workshop occupied only the first floor. There was a platform lift (windy) by which the wood and metal were transported to the workshop from the upper two floors. [redacted]

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20. This was a 1-story, red brick, shed-roofed building, which served as a combination workshop and storeroom for the aluminum foundry. It measured 50 by 5 by 3½ m. There were facilities for the repair of foundry equipment and storage room for the storage of parts and assemblies for foundry equipment. [redacted] 50X1-HUM
21. This was the building where water from the central plant boiler was air cooled. [redacted] 50X1-HUM
22. This was the provisional boiler room, the central heating plant for the entire factory. It was a building of steel, about 50 by 35 by 6 m with gray stucco walls, and a flat roof with a triangular skylight. The boilers were located there temporarily until the new boiler room house was completed (see number 27). [redacted] 50X1-HUM
23. This was the electrical workshop and office of the chief electrician. The building adjoined number 22 (see above) and was in two parts. Part one, the electrical workshop (northern part), was a steel construction, with gray stucco walls and a flat roof with a triangular skylight; it measured about 40 by 35 by 6 m. Part two (southern part) was a 2-story steel-frame, gray stucco, flat-roofed office building, about 10 by 35 by 7 m. It housed the offices of the chief electrician (główny elektryk). [redacted] when building number 22 is vacated, it was to be included for use as part of the electrical workshop. [redacted] 50X1-HUM
24. This was the forge workshop. It was a building of steel construction, gray stucco, about 20 by 12 by 12 m, with a flat roof. A portion of the building was to be made into a cast painting shop (malarnia dla odlewów) sometime in the future. [redacted] 50X1-HUM
25. This was the metals storage warehouse for the mechanical division (magazyn materiałowy metalowy dla wydziałów mechanicznych). It was a building of steel construction about 50 by 50 by 4 m, with sheet metal walls and a saddleback roof. Metal in all forms was stored there; sheet metal, bars, wire, and many other forms. The building was served by a rail spur on its western side. [redacted] 50X1-HUM
26. This was the forge (kuznia), a steel construction, gray stucco building with a flat roof, containing square box-type skylights. The building measured about 35 by 25 by 10 m. On its southern side there was an office building addition, which housed the offices of the forge and social facilities for the forge workers. It was a 3-story, gray stucco, flat-roofed building, about 20 by 6 by 10 m. [redacted] 50X1-HUM
27. This was the approximate location of the new boiler room building. It was to be started in late 1958 and was to be gray stucco and about 15 by 10 by 6 m. [redacted] 50X1-HUM
28. This was a reinforced concrete, prefabricated, flat-roofed building, about 50 by 36 by 9 m, which was used as a storage warehouse. It contained machinery which was to be used for the production of the Bialorus tractors, but since that project was abandoned, the machinery had been idle and in storage. At the southern end of the building were the offices of the project investment division (biuro inwestycji). [redacted] 50X1-HUM

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-16-Legend to Annex E (Continued)

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29. Same as number 28, except that the office part at the southern end of the building was no longer used. It formerly housed the production offices for the Bialorus tractors. [REDACTED] 50X1-HUM
30. This was the workers' railroad station house and platform. The station house was constructed of reinforced concrete and had a large overhanging roof, which covered the platform in front. It measured about 20 by 3½ by 3 m and contained a small waiting room (poczekalnia) and offices for the railroad workers. There were two platforms; the northern for west-bound traffic and the arrival platform for the Ursus workers, and the southern platform for east-bound traffic. The platforms were identical in size and composition, 60 by 7 m, part concrete and part plank. [REDACTED] 50X1-HUM
31. The Ursus factory railroad siding.
32. The double track of the main line between WARSAW and PRUSZKOW. The northern line was west-bound and the southern track was east-bound.
33. Heavy wire fence about 2 m high, which completely enclosed most of the factory terrain.
34. Red brick fence, about 300 m long and 2 m high, which enclosed a portion of the southern boundary of the factory.

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